

Having described the invention, the following is claimed:

1. An apparatus for controlling an actuatable occupant protection system in a passenger compartment of a vehicle, the apparatus comprising:

a camera configured for obtaining an image of a viewable field within the passenger compartment of the vehicle;

at least one pattern associated with vehicle structures located within the viewable field;

means for removing portions of the obtained image associated with vehicle structures having the pattern so as to obtain information regarding occupancy of the viewable field; and

means responsive to the obtained occupancy information for controlling the actuatable occupant protection system.

2. The apparatus of claim 1 wherein a first pattern is associated with a first vehicle structure and a second pattern, different from the first pattern, is associated with a second vehicle structure.

3. The apparatus of claim 1 further including means for detecting the pattern in the obtained image.

4. The apparatus of claim 3 wherein the means for detecting the pattern in the obtained image includes means for forming a binary image from the obtained image, the means for forming the binary image including means for comparing pixel values of the obtained image with a threshold value and providing a binary zero when a respective pixel value fails to exceed the threshold value.

5. The apparatus of claim 4 wherein the means for comparing pixel values provides a binary one when the respective pixel value exceeds the threshold value.

6. The apparatus of claim 1 further including means for creating an image mask of the vehicle structures.

7. The apparatus of claim 6 wherein the means for removing portions of the obtained image associated with vehicle structures includes means for applying the image mask to the obtained image.

8. The apparatus of claim 1 wherein the at least one pattern is formed from a dye that is adapted to fluoresce at a near-infrared wavelength of light, the camera being a near-infrared camera that is adapted to obtain an image at the fluorescing near-infrared wavelength.

9. The apparatus of claim 8 further including an optical filter associated with the camera, the optical filter allowing passage of a predefined range of near-infrared wavelengths of light and preventing passage of wavelengths of light outside of the predefined range.

10. The apparatus of claim 8 further including an illuminator adapted for illuminating the viewable field within the passenger compartment with near-infrared light.

11. The apparatus of claim 1 wherein the actuatable occupant protection system includes an inflatable air bag, the means responsive to obtained occupancy information including an inflation-varying device for varying inflation of the inflatable air bag.

12. An apparatus for controlling an actuatable occupant protection system in a passenger compartment of a vehicle, the apparatus comprising:

a dye having low near-infrared reflective properties, the dye being associated with vehicle structures located within a viewable field within the passenger compartment of the vehicle;

a camera configured for obtaining a near-infrared image of the viewable field; and

means responsive to the near-infrared image for controlling the actuatable occupant protection system.

13. A method of controlling an actuatable occupant protection system in a passenger compartment of a vehicle, the method comprising the steps of:

obtaining an image of a viewable field within the passenger compartment of the vehicle;

associating at least one pattern with vehicle structures located within the viewable field;

removing portions of the obtained image associated with vehicle structures having the pattern so as to obtain information regarding occupancy of the viewable field; and

controlling the actuatable occupant protection system in response to the obtained occupancy information.

14. The method of claim 13 wherein the step of associating a pattern with vehicle structures located within the viewable field includes the steps of associating a first pattern with a first vehicle structure and associating a second pattern, different from the first pattern, with a second vehicle structure.

15. The method of claim 13 further including the step of detecting the at least one pattern in the obtained image.

16. The method of claim 15 the step of detecting the at least one pattern in the obtained image further includes the step of forming a binary image from the obtained image by comparing pixel values of the obtained image with a threshold value and providing a binary zero when a respective pixel value fails to exceed the threshold value.

17. The method of claim 13 further including the step of creating an image mask of the vehicle structures.

18. The method of claim 17 wherein the step of removing portions of the obtained image associated with vehicle structures having the pattern further includes the step of applying the image mask to the obtained image.

19. The method of claim 13 further including the step of forming the at least one pattern from a dye that is adapted to fluoresce at a near-infrared wavelength of light and wherein the step of obtaining an image of a viewable field within the passenger compartment of the vehicle includes the step of obtaining the image at the fluorescing near-infrared wavelength.

20. The method of claim 19 further including the step of illuminating the viewable field within the passenger compartment with near-infrared light.

21. A method for controlling an actuatable occupant protection system in a passenger compartment of a vehicle, the method comprising the steps of:

associating a dye having low near-infrared reflective properties with vehicle structures located within a viewable field within the passenger compartment of the vehicle;

obtaining a near-infrared image of the viewable field; and

controlling the actuatable occupant protection system in response to the near-infrared image.